

TOTAL LIFE CYCLE (TLC) INTEGRATED METRICS PACKAGE

WHY METRICS FOR TOTAL LIFE CYCLE SYSTEMS MANAGEMENT?

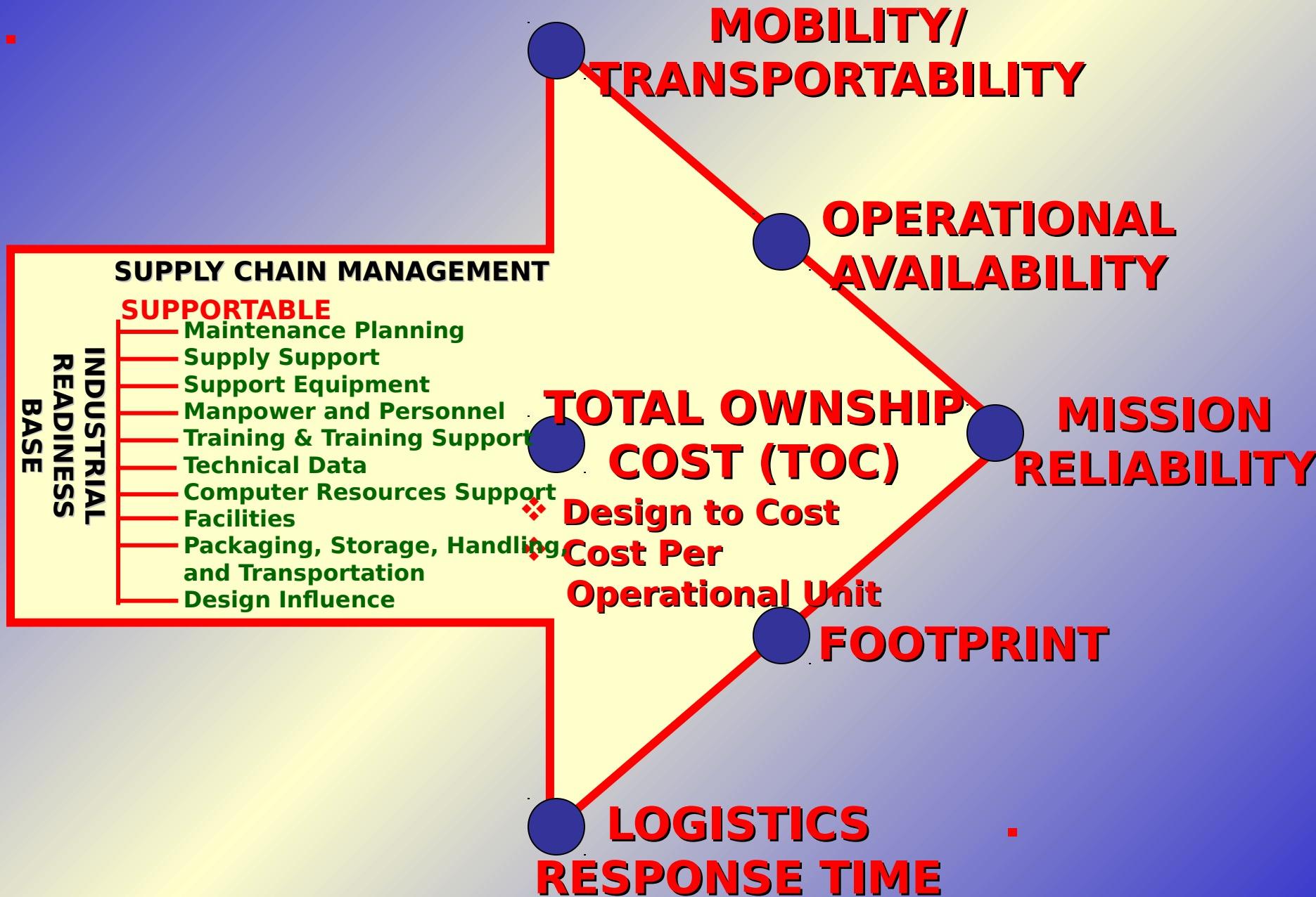
- **It's a sound business practice**
- **Joint Logistics Board (JLB) Memo
13 Jan 03, JLB Balanced Scorecard
Metrics Tasking**
- **Defense Business Board (DBB)
Recommendations**
- **Deputy Secretary of Defense Memo
4 Feb 04, Implementation of BDD
Recommendations to the SEC**

ASSUMPTIONS

- Integrated Logistics Support (ILS) is Our Process for Planning and Executing Product Support
- There is no need for a separate set of metrics for an Organic or Contract PBL
- All OSD reporting will be linked to the level 3 performance metrics.

LEVEL 3 METRICS

- Operational Availability (Ao)
- Mission Reliability
- Total Ownership Cost (TOC)
 - Design to Cost (Measure Prior to Fielding)
 - Cost per Operational Unit (Measure Post Fielding)
- Response Time
- Footprint
- Mobility/Transportability



LEVEL 3**MISSION RELIABILITY**

MOBILITY/ TRANSPORTABILITY		OPERATIONAL AVAILABILITY		FOOTPRINT	LOGISTICS RESPONSE TIME	TOTAL OWNERSHIP COST (TOC)	
LEVEL 4		Logistics		Support Manpower	Customer Wait Time	Cost per Operational Unit	Design To Cost <i>For use prior To fielding</i>
Capabilities	Measures	Reliability	Maintainability	Delay Time			
Self Propelled	Capacity By Segment	Time to Failure	Time to Maintain	Time to Support	Class 1-9 Supplies	Mean Support Response Time	Procurement/ Investment
Towed Carrier	Lift Capacity Utilization	Mean Time Between Failure	Mean Time Between Failure	Mean Supply Response Time	Material Handling	Reaction	Military Construction
Railways	Rate	Mean Time Between Failure	Mean Time Between Failure	Mean Outside Assistance Delay Time	Equip/Cargo Handling	Time	Operation and Support
Highways	Lift Positioning	Mean Time Between Demand	Mean Time Between System	Mean Admin Down Time	Equip	Definite Delivery	Disposal
Waterways	% Movement	Mean Time Between	Mean Time Between	Mean Admin Down Time	Transporta- tion		
Pipelines	Visibility	Critical Failure	Mean Time Between	Mean Logistics Down Time	30 Day Supplies	Perfect Order Fulfillment	
Airways	% Total Asset Visibility	Mean Time Between	Mean Time Between	Mean Logistics Down Time	Test/Spt Equipment	Distribution	
	Time Definite Delivery	Action Removals	Mean Down Time	Non-Mission Capable Maint	Maintenancetime	Process Response	
		False Alarm Rate	Time To Restore Functions	Non-Mission Capable Supply		Change Cycle Time	
		Fraction Fault isolation	Mean Down Time	Mean Time To Service	Misc.	Resupply Cycle Time	
		Fraction Fault Detection		Partial-Mission Capable Maint		Inventory Turns	
				Partial-Mission Capable Supply		Depot Responsiveness	

BLUE = Level 3 Metrics

PURPLE = Headings

GREEN = Level 4 Metrics

**Design
To Cost
*For use prior
To fielding***

**Cost per
Operational
Unit
*For use after
fielding***

$$Ai = \frac{MTBF}{MTBF + MTTR}$$

$$Aa = \frac{MTBM}{MTBM + MTTR}$$

$$Ao = \frac{MTBM}{MTBM + MDT}$$

Ships

$$K'' = K' - \frac{MTTR + MLDT}{MTBF}$$

$$Ao = \frac{K'' (MTBF)}{K'' (MTBF) + MTTR + MLDT}$$

Predictive Operational Availability

$$Ao = \frac{MTBF}{MTBF + MTTR + MLDT}$$

Aircraft

$$Ao = 1 - \frac{MTTR + MLDT}{K' (MTBF)}$$

$$K' = \frac{\text{Total Calendar Time}}{\text{Total Operation Time}}$$

Measured Operational Availability

$$Ao = \frac{MTBF}{MTBF + MDT}$$

Impulse Systems

$$Ao = \frac{\text{Number of Successes}}{\text{Number of Attempts}}$$

Aircraft (Dr. Rice)

$$Ao = \frac{MTBF}{MTBF + MTTR + MLDT + TAT}$$

Continuous Use Systems

$$Ao = \frac{MTBF}{MTBF + MTTR + MSRT + MOADT + MAdmDT}$$

NOTE: $MLDT = MSRT + MOADT + MAdmDT$

MTBF = Mean Time Between Failure

MTTR = Mean Time To Repair

MTBM = Mean Time Between Maintenance

MDT = Mean Down Time

MLDT = Mean Logistics Delay Time

TAT = Turn-Around-Time (Aircraft)

MSRT = Mean Supply Response Time

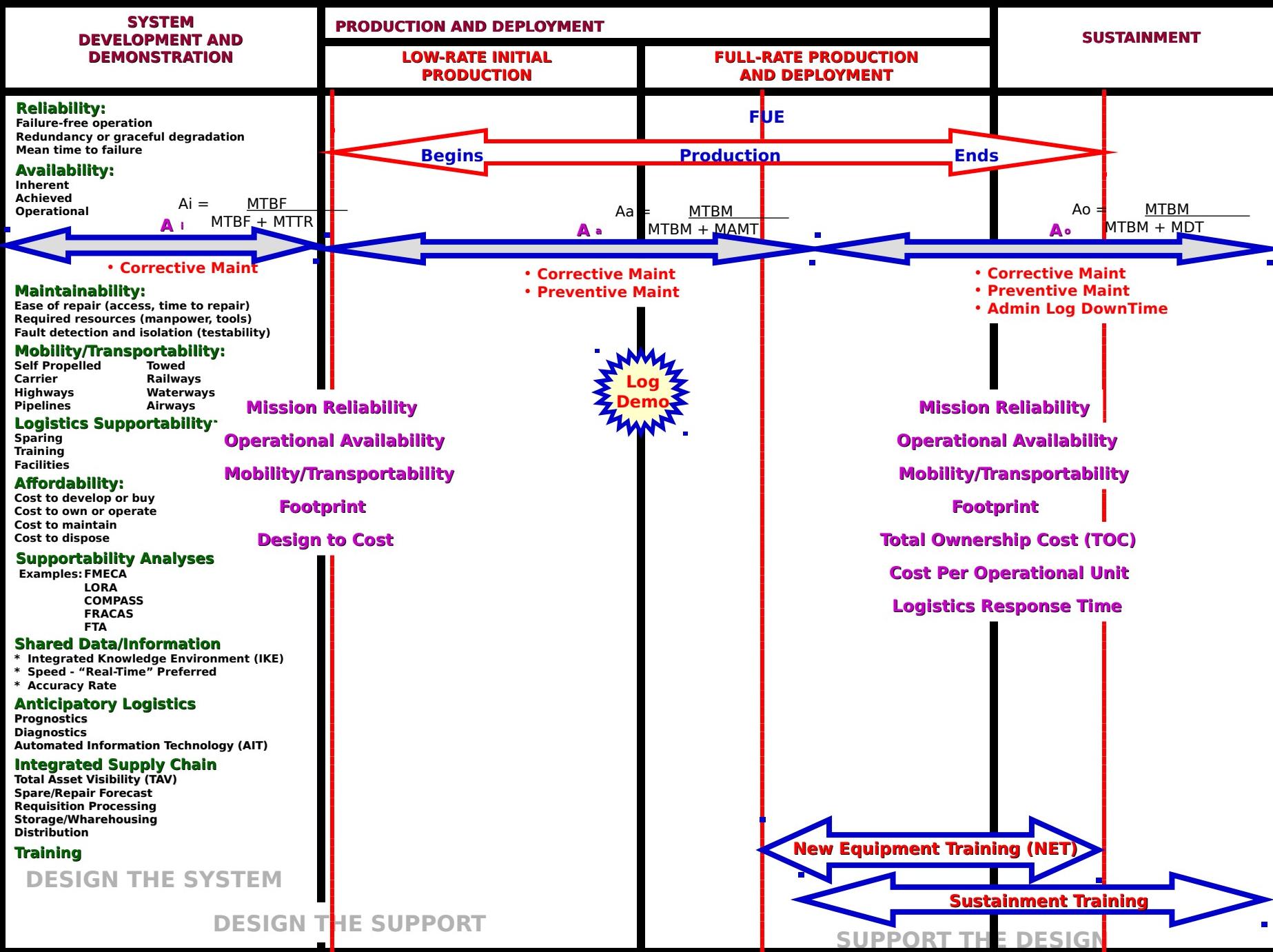
MOADT = Mean Outside Assistance Delay Time

MAdmDT = Mean Administrative Delay Time

Aa = Achieved Availability

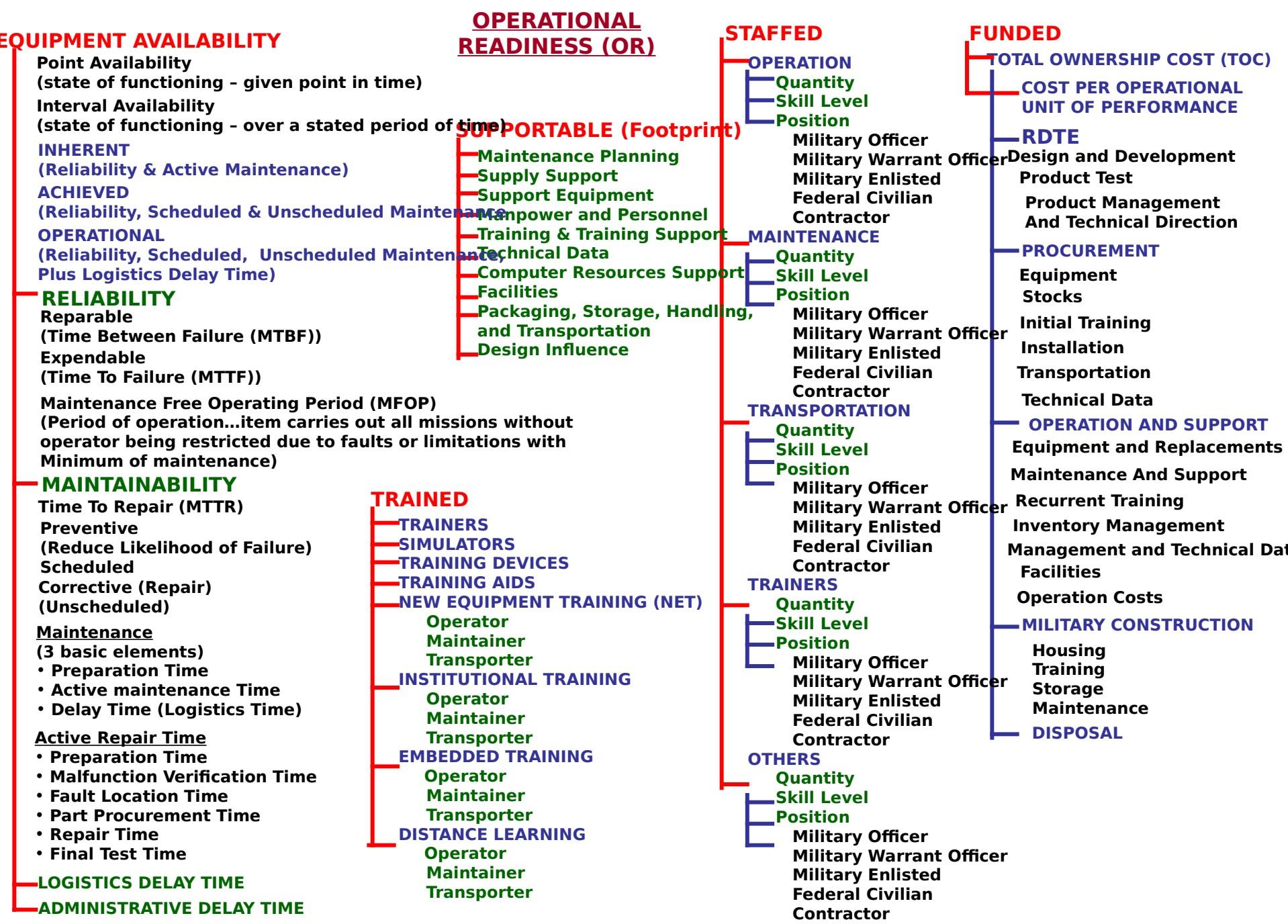
Ai = Inherent Availability

Ao = Operational Availability



BACK-UP SLIDES





OPERATIONAL READINESS (OR)

<u>AVAILABILITY</u>	<u>STAFFED</u>	<u>TRAINED</u>	<u>SUPPORTED</u>	<u>FUNDED</u>
Capabilities	Operators Required	Trainers Required Trainers Available	Customer Wait Time	Total Ownership Cost (TOC)
Readiness	Operators On-hand	Simulators Required Simulators Available	Number Logistics Demands	Cost per Operation Unit of Performance
Maintainability	Operators Trained	Training Devices Required Training Devices Available	Repair Cycle Time	
Logistics Delay Time	Maintainers Required	Training Devices Required Training Devices Available	Response Time	
Admin Delay Time	Maintainers On-hand	Training Aids Required Training Aids Available		
	Maintainers Trained	New Equipment Training Courses Required		
	Transporters Required	New Equipment Training Courses Provided		
	Transporters On-hand	Number of Students Trained		
	Transporters Trained	Institutional Training Courses Required		
	Others Required	Institutional Training Courses Provided		
	Others On-hand	Number of Students Trained		
	Others Trained	Embedded Training Available		
		Distance Learning Available		
		Unit Training Conducted		